Installation, Operation and Maintenance Manual

TX 250A	TX 500A	TX 750A	TX 1000A

Rev. 2014.10.01

Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

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Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

3.0.0 General information

3.1.0 Introduction

This user manual contains technical information about installation, operation and maintenance of the unit.

3.2.0 Fields of application

TX Comfort is designed for comfort ventilation in institutions, offices, dining spaces, conference rooms and indoor spaces occupied by people.

3.3.0 Misuse

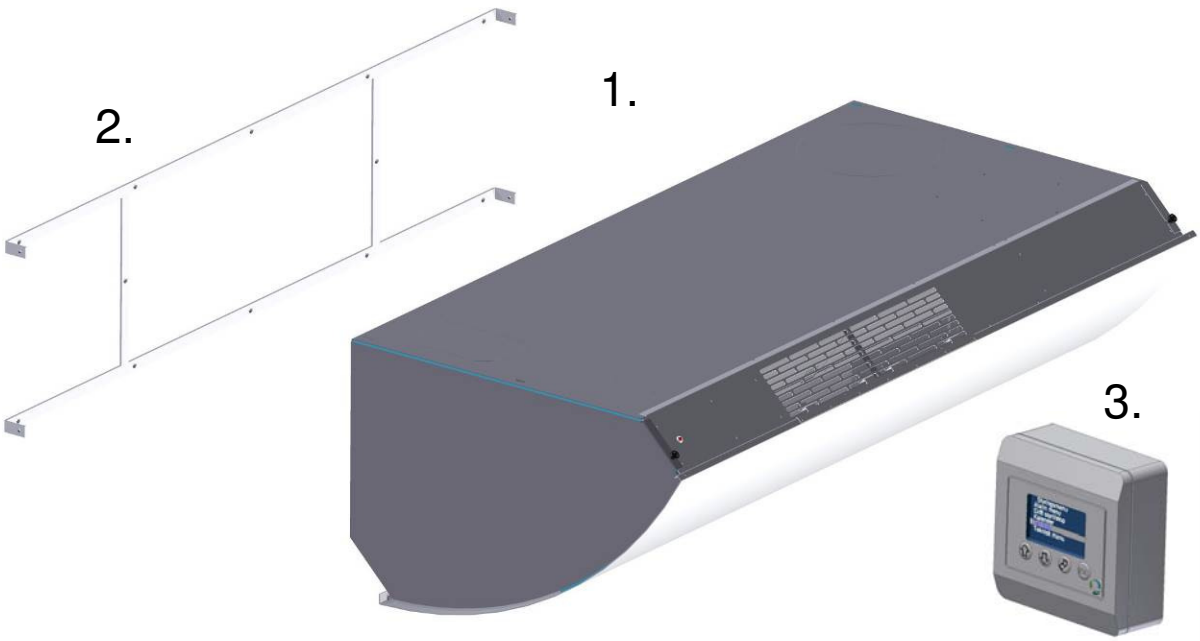
TX Comfort is designed for the living spaces described above in section 3.2.0. The system is not designed for the purpose of local exhaust ventilation.

3.4.0 Contents of delivery

The TX Comfort unit is delivered with the following main components:

1. Turbovex TX Comfort unit
2. Suspension bracket
3. TX electronic controller

Figure 1 Contents of delivery



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e-mail: info@turbovex.dk – www.turbovex.dk

3.4.0 Operating principle

Turbovex TX Comfort is a decentralized ventilation system with built-in heat recovery for ventilation of comfort rooms in particular in indoor living spaces.

TX Comfort operates with an aluminium counter flow heat exchanger (5) to ensure maximum heat recovery. The unit utilizes warm indoor air to heat up inflowing fresh outdoor air. The counter flow heat exchanger's sole function is for heat retention.

Airflow:
The air supply ventilator (6) (Figure 2) creates inflow of fresh outdoor air through the filter (10), leading the inflow through the heat exchanger (5), and further through the air supply grate (4) and out into the room.

At the same time the air exhaust ventilator (7) creates outflow of indoor air leading it through the exhaust pipe (2) and further out to the open air outside.

The desired temperature of the air supply is regulated on the control panel. A sensor records the actual temperature of the flowing air supply. If the temperature is lower than the setpoint, the control system reduces the flow of the air supply warming it as it flows through the heat exchanger.

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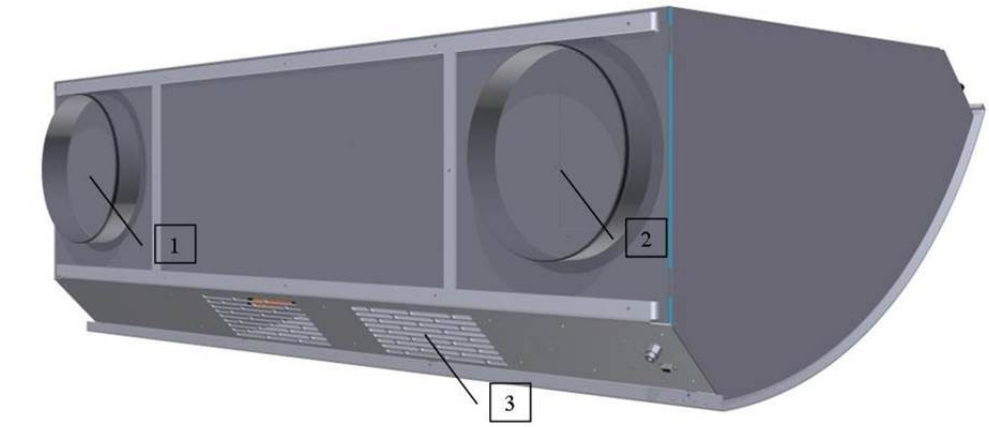
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

3.5.0 Main components:

1. Supply air
2. Exhaust air
3. Exhaust air grate
4. Supply air grate
5. Counter flow heat exchanger
6. Supply air fan
7. Exhaust air fan
8. Bypass motor
9. Damper motor
10. Supply air filter
11. Control board
12. Heater (optional)
13. Circuit Breaker
14. Filter guard
15. Filter alarm indicator



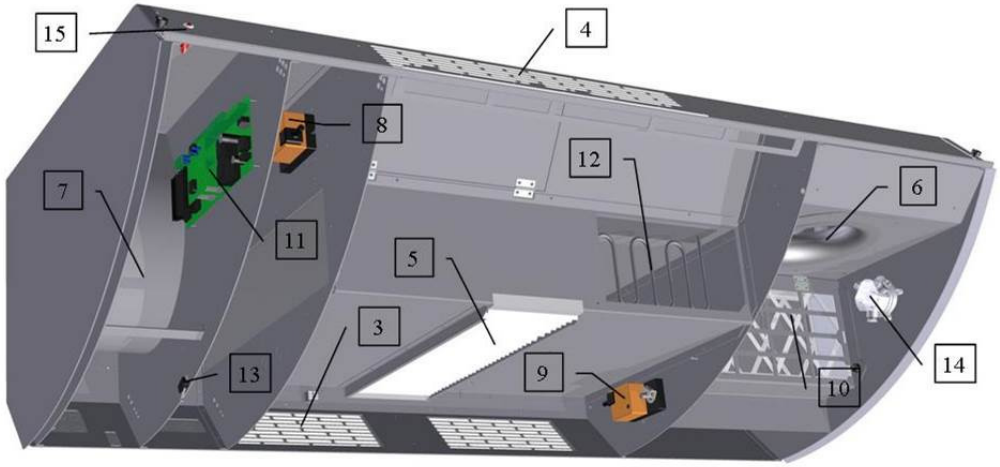


Figure 2 Main components

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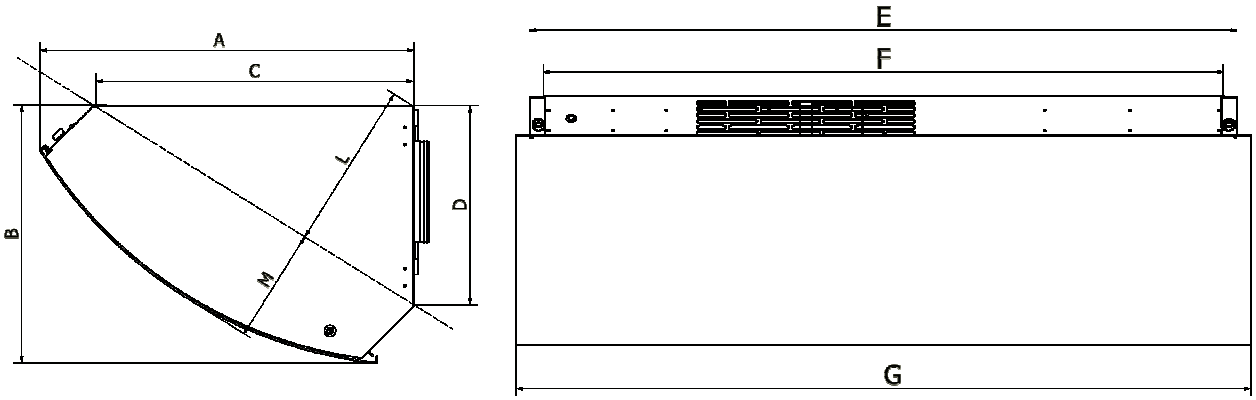
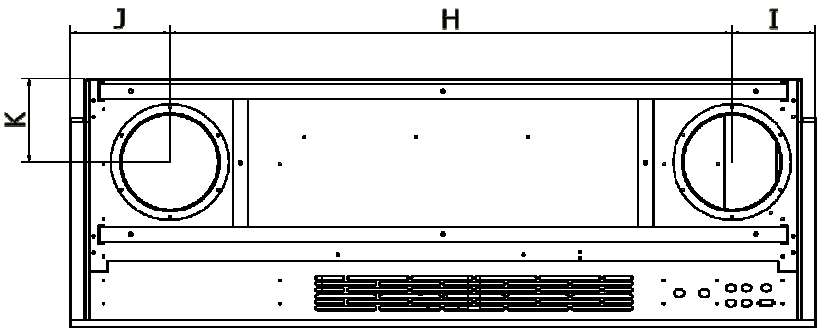
4.0.0 Installation

4.1.0 Scale illustration

Figure 3 Dimension Drawing

Dimension [mm]	TX 250A	TX 500A	TX 750A	TX 1000
A	595.00	828.00	895.00	1050.00
B	403.00	493.00	565.00	665.00
C	500.00	710.00	766.00	917.00
D	313.00	382.00	442.00	542.00
E	1155.50	1505.50	1766.50	2066.50
F	1141.00	1491.00	1750.00	2050.00
G	1200.00	1550.00	1800.00	2100.00
H	906.00	1156.00	1355.00	1630.00
I	134.50	189.00	210.00	235.00
J	159.50	205.00	235.00	235.00
K	136.60	186.60	202.50	252.50
L	280,00	350,00	390,00	465,00
M	185,00	245,00	280,00	310,00





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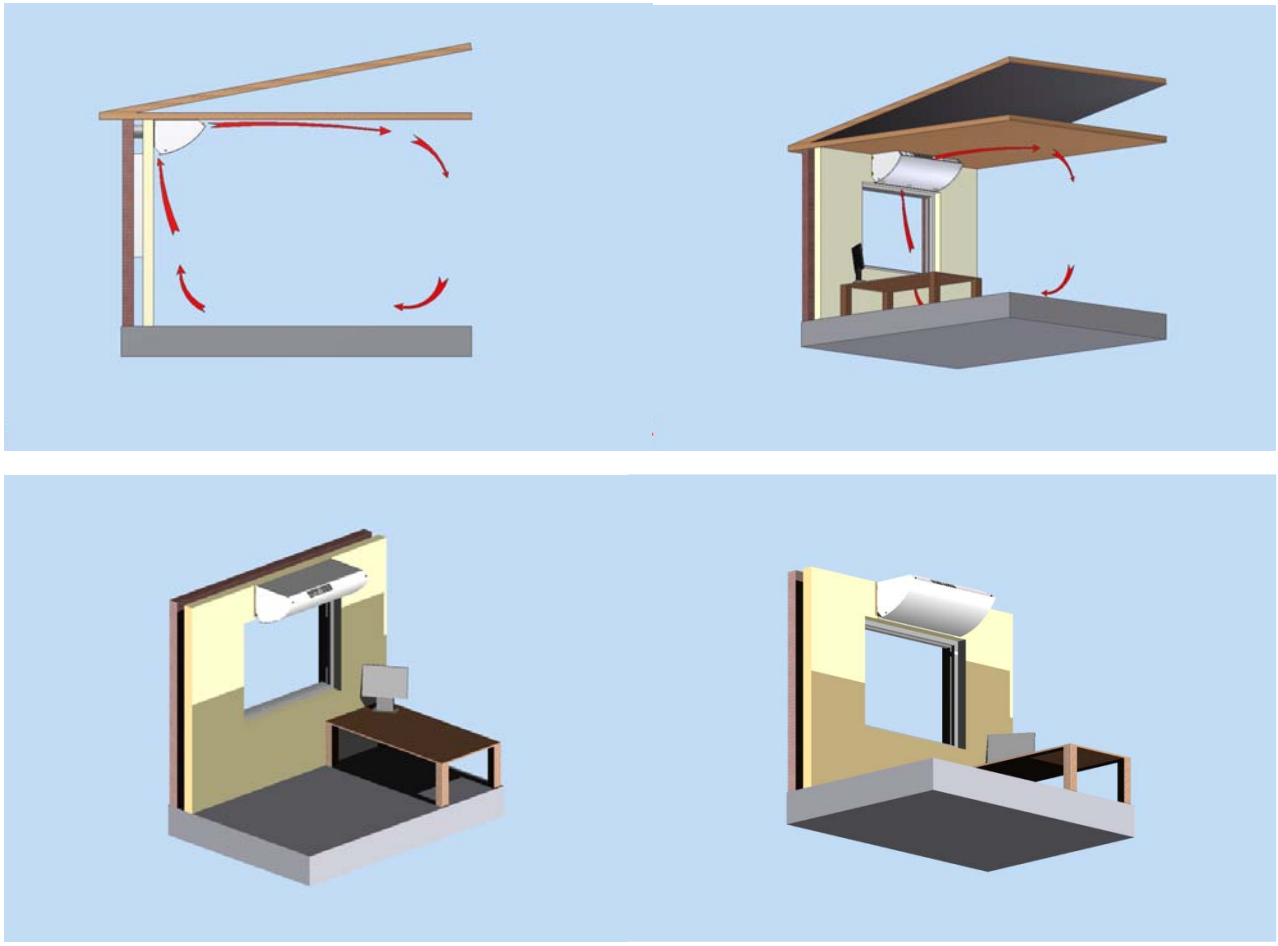
4.2.0 Location

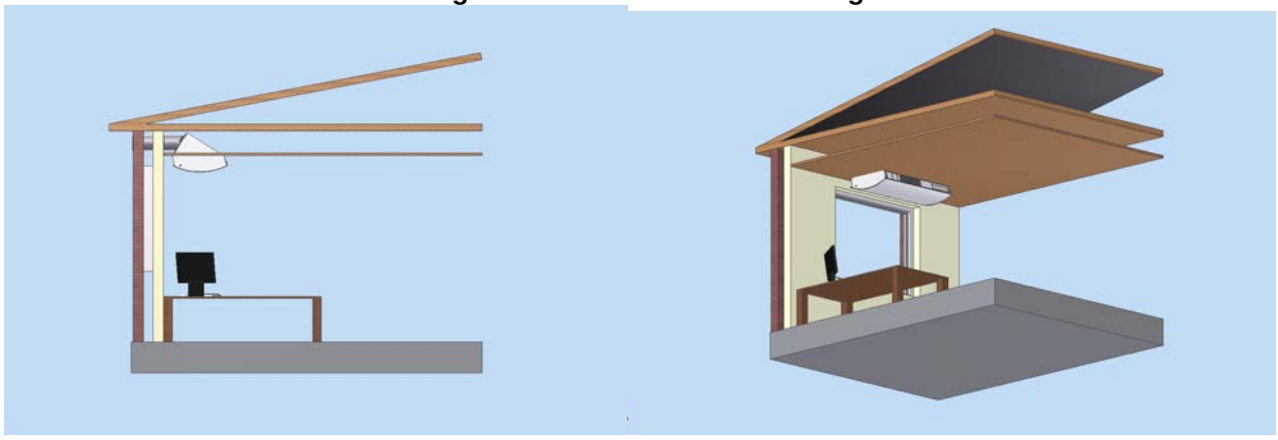
The unit is generally placed on a wall directly under the ceiling. This location best exploits the coanda effect as it leads the air further into the room along the surface of the ceiling. In this way inflowing air can mix with the room's existing air for a longer period of time and thereby prevent draught. This location, as the point for supply and exhaust airflow, provides optimal circulation within a room.

Figure 4 Location, conventional



The TX Comfort series also has the possibility of locating the unit in false ceilings. In this way, the unit is less visible.

Figure 5 Location in a false ceiling



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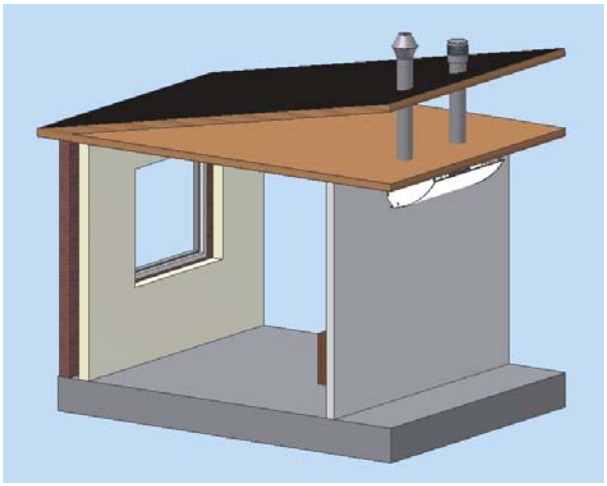
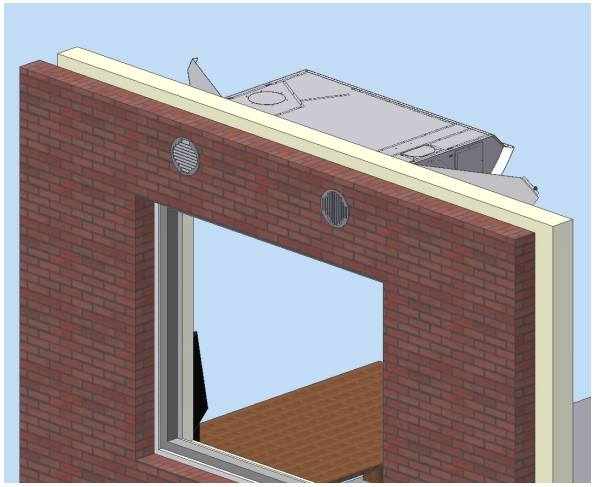
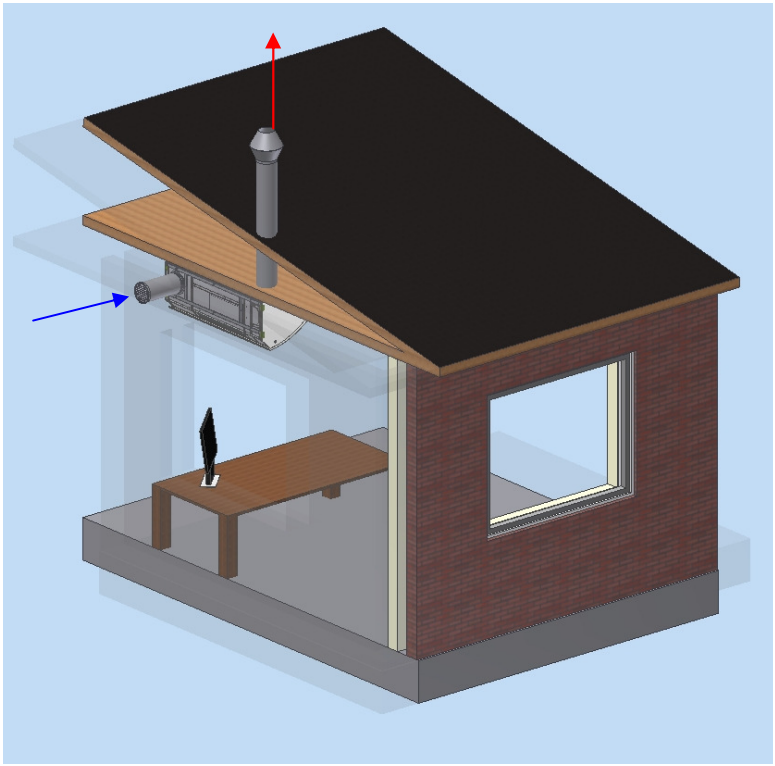
The TX Comfort series offer the possibility of installing ducts through the wall or the roof.





Fresh air can also flow in through a wall duct while exhaust air flows out through the roof. This results in optimal conditions in comparison to a set up with close proximity between the air supply and the air exhaust.



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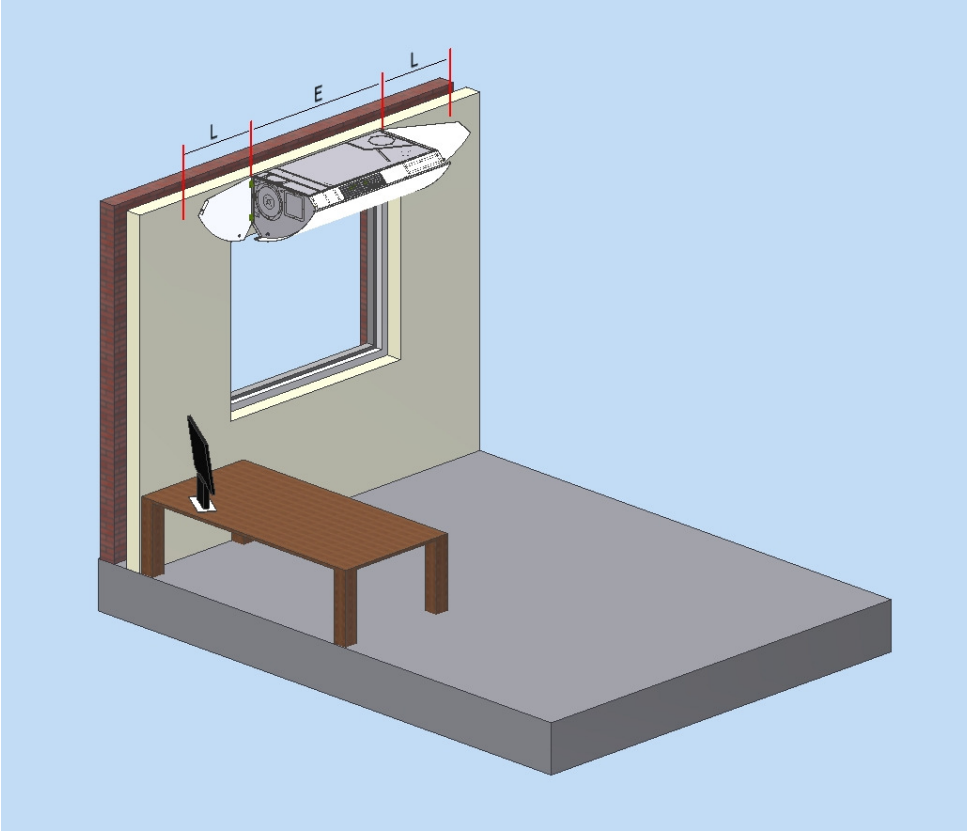
4.2.1 Minimum distance

Minimum allowed distance between the unit and walls, cupboards or other surfaces.

Figure 6 Minimum distance

Mål	TX 250A	TX 500A	TX 750A	TX 1000A
E	1155.50	1505.50	1766.50	2066.50
L	600.00	850.00	950.00	1100.00



It is important to check that there is sufficient space for the sides of the unit to be fully opened during installation. The minimum distance must be the length L as indicated in the illustration above.

4.2.2 Wall- or ceiling mounted unit

When the unit is wall- or ceiling mounted, the required outward free space from the centre of each of the two ducts must be the distance M (see Figure 7 and 8.)

The location of the suspension bracket and the measurements for mounting the bracket are indicated in the illustrations below.

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Mål	TX 250A	TX 500A	TX 750A	TX 1000A
M	142.00	192.00	209.00	259.00
N	906.00	1156.00	1355.00	1630.00
O	137.25	187.25	218.25	218.25
P	112.25	162.25	193.25	218.25
Q	136.60	186.60	202.50	252.50

Figure 7 Wall-mounted with wall ducts

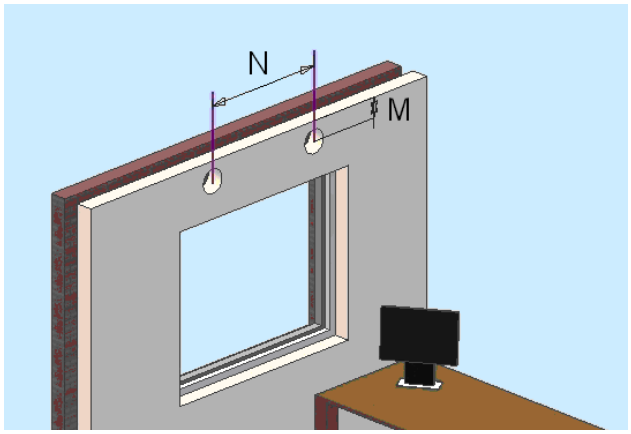
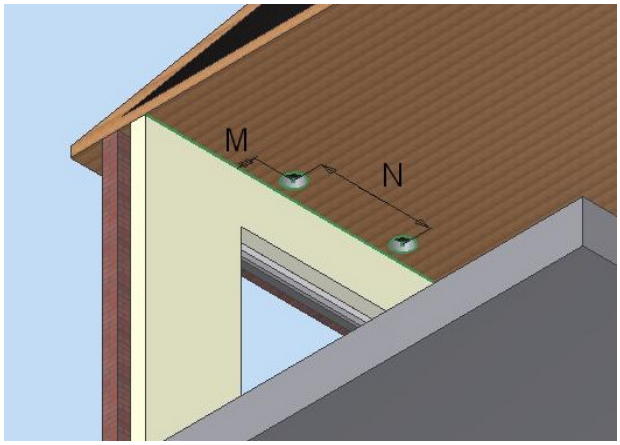
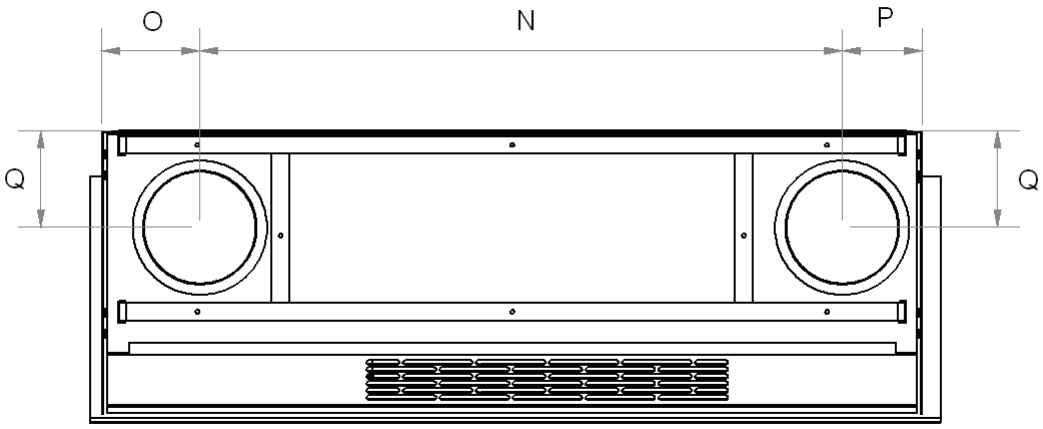


Figure 8 Ceiling-mounted with ceiling ducts



The location of the unit in relation to the ducts (Please note that the unit is viewed from the rear in the figure below).

Figure 9 Location of ducts



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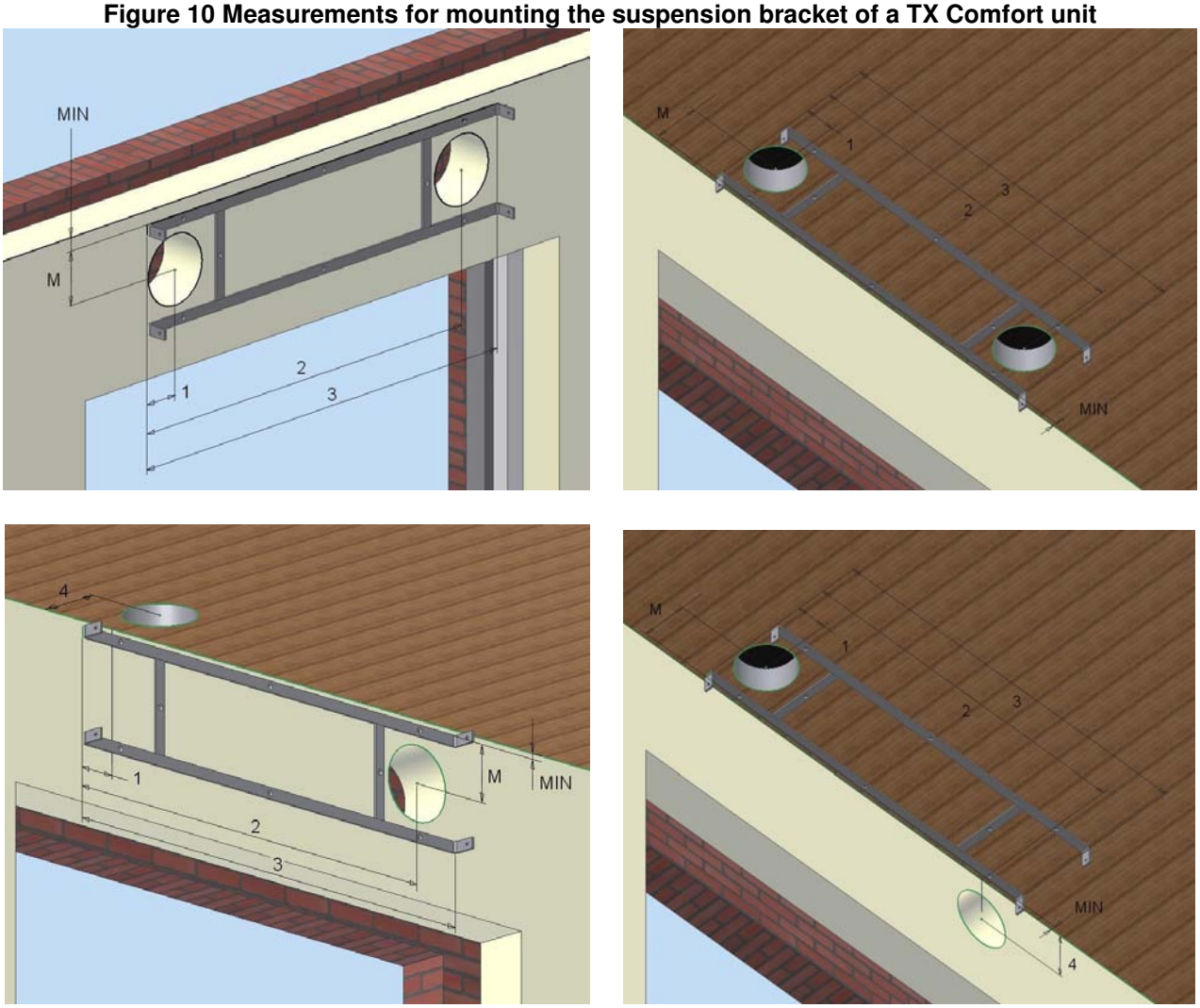
4.3.0 Installation of unit

4.3.1 Installation with 2 ducts

Install the suspension bracket on either the wall or the ceiling. Use the measurements to pinpoint where to create the ducts and where to mount the bracket.

Mål	TX 250A	TX 500A	TX 750A	TX 1000A
MIN	13.00	13.00	15.00	15.00
M	129.00	178.50	194.00	243.00
1	88.50	138.50	168.00	192.50
2	994.50	1294.50	1523.00	1822.50
3	1108.00	1458.00	1716.00	2016.00
4	142.00	191.50	209.00	258.00

Figure 10 Measurements for mounting the suspension bracket of a TX Comfort unit



It is important that the ”**MIN**” measurement is followed carefully so that the unit has enough space to be mounted on the bracket.

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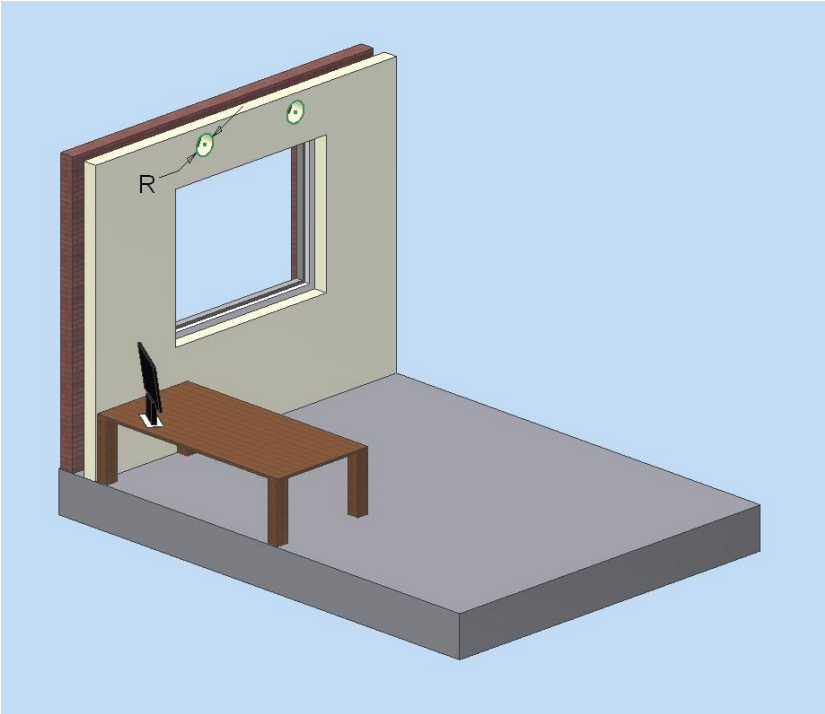
Drill two holes, 5 to 10 mm bigger than the ducts (R) through the wall or the ceiling. It is **important** to observe all the minimum measurements described in section 4.2.1 Minimum distance.

Mål	TX 250A	TX 500A	TX 750A	TX 1000A
R	160.00	250.00	315.00	350.00



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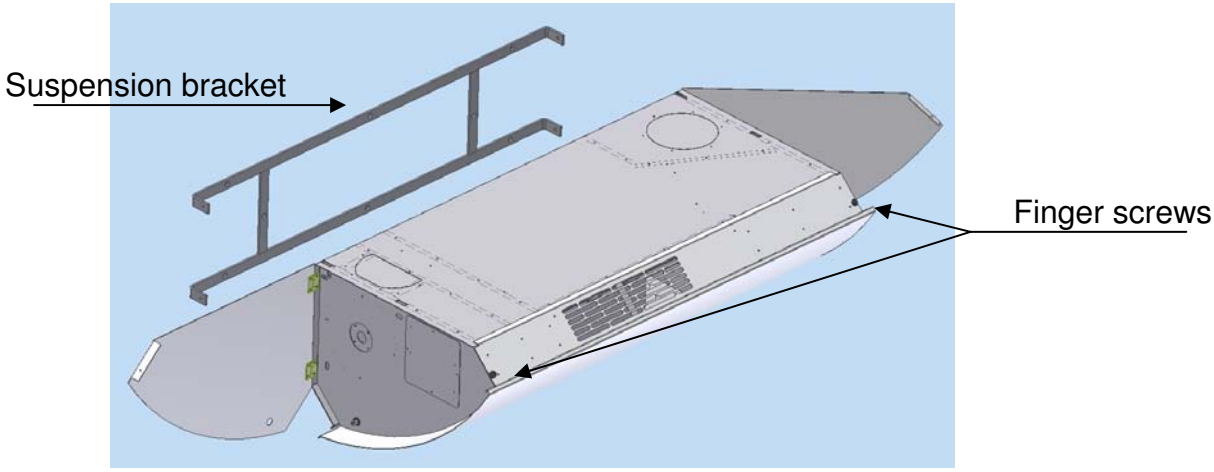
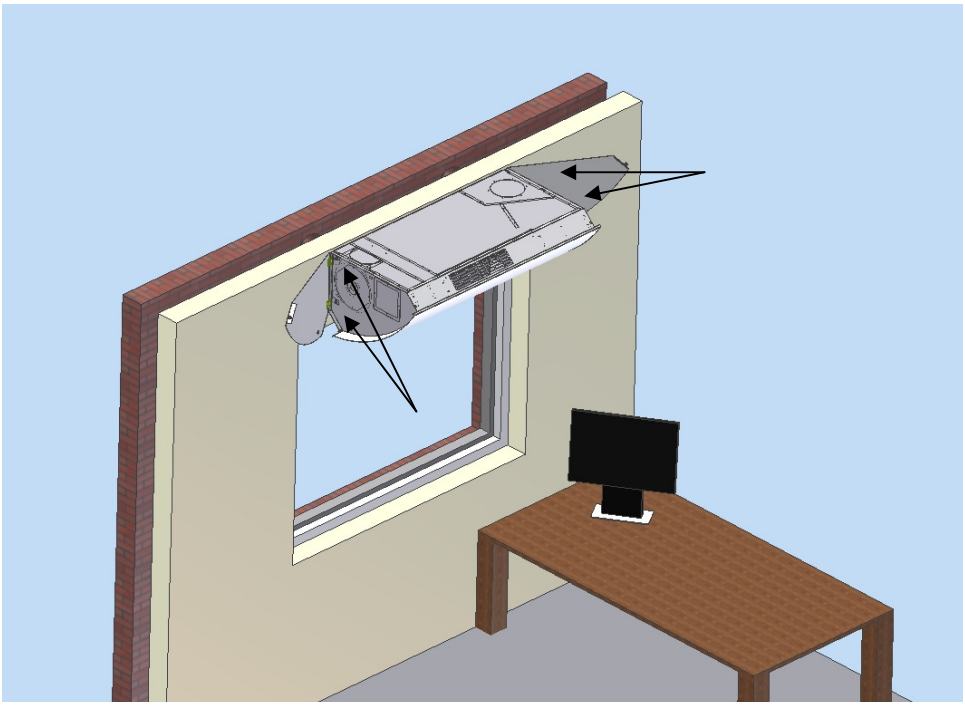
Loosen the two finger screws to open the doors on each side. Remove the suspension bracket and mount it on the wall or the ceiling.



Place the unit on the bracket and mount it with the included 4 bolts.



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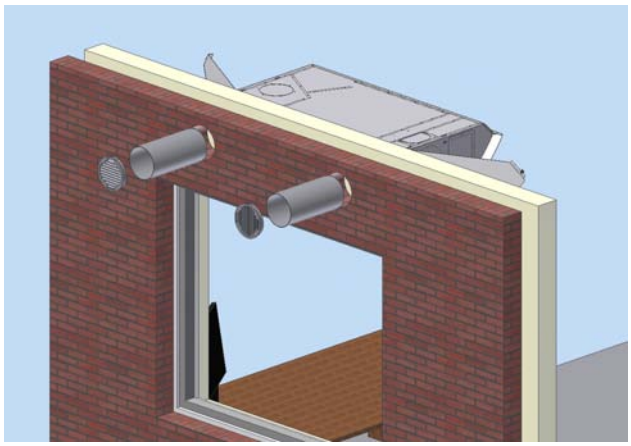
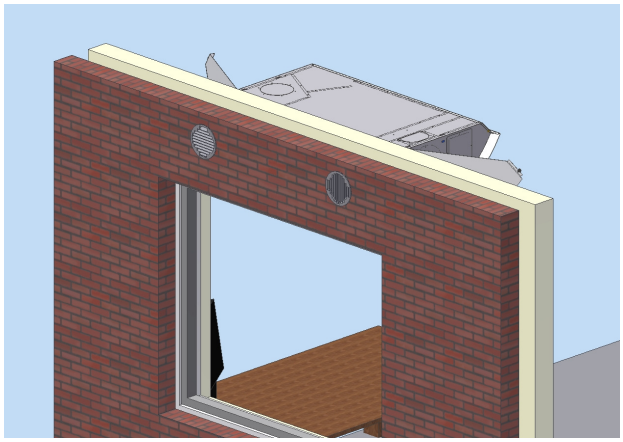
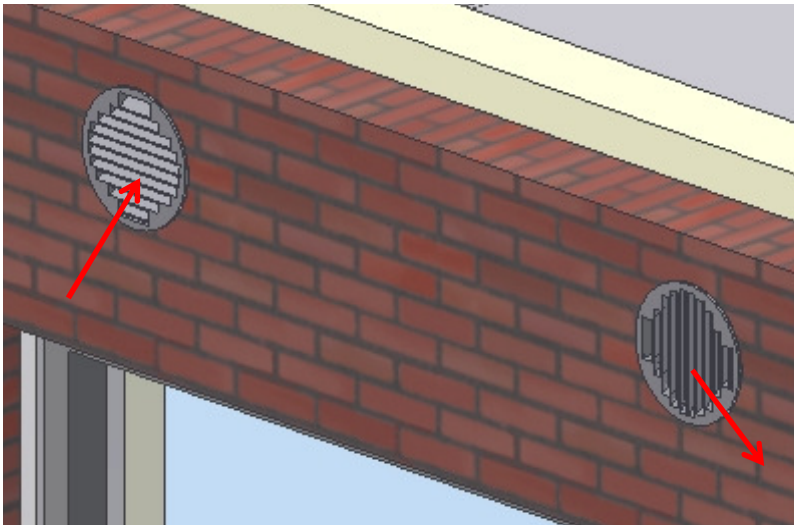
Mount the ducts. If mounted on the facade, there must be a descending gradient of 1-2% toward the outside to avoid penetration of heavy rainwater into the unit.





Mount the outside facade grates. Mount the grate of the air exhaust with the lamellas facing sideways. The sideways direction should be oriented in the direction away from the air supply. Mount the grate of the air supply with the lamellas facing downwards.



Note!
It is important to seal the ducts 100% at the spigot of the unit; otherwise false air will penetrate the unit.
The ducts must on no account be twisted or pressed against the installation collars of the unit, as it will cause an increased noise level of up to +6dB. Be sure that the duct holes leave enough room for insulation with rockwool or insulation foam.

Connect the power supply according to the included electrical diagram.

Turbovex A/S
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Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
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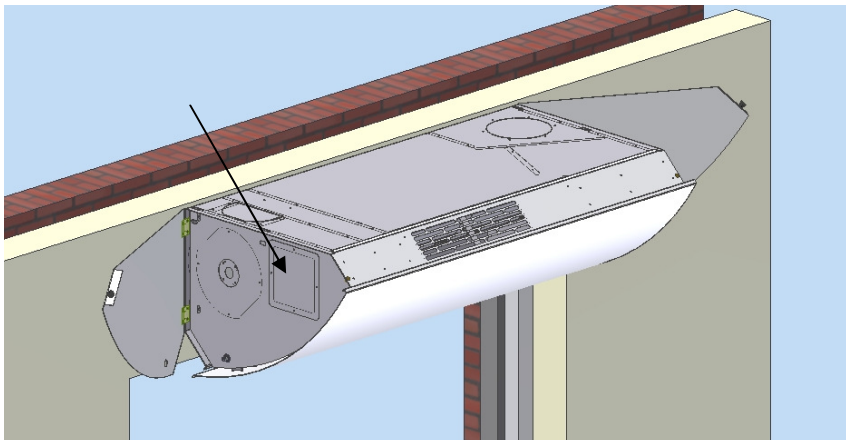
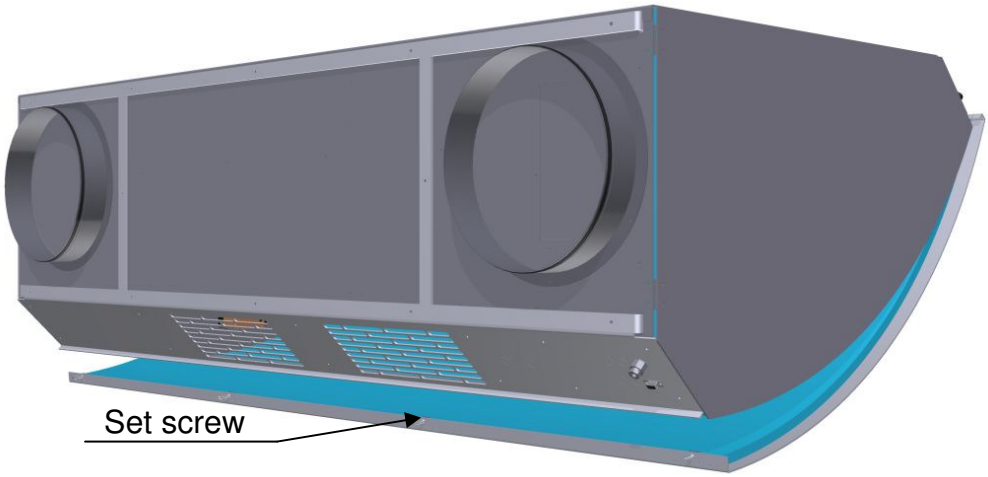
Note!
The power connection must be performed by a professional electrician.

There are two different approaches of locating the main circuit board.

1. Open the left hand side of the unit and remove the service hatch.



2. Remove the front panel.
   The front panel can be removed by loosening the set screws with an Allen key.
   The main circuit board will be found in the left side of the unit. See figure 2 page 5.



Mount the front panel and/or sides and the unit is ready for use. Make sure to tighten the set screws, otherwise leakage may occur in the unit.

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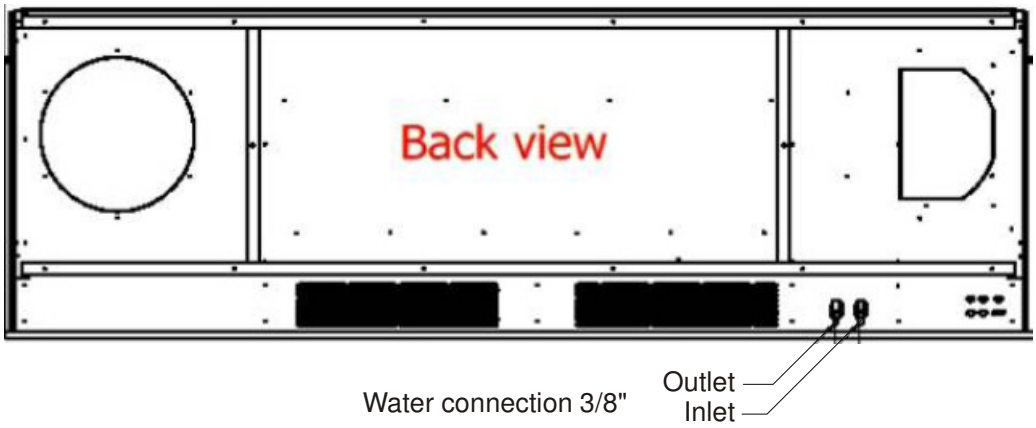
5.0.0 Connection

5.1.0 Water connection

Refer to Section 5.1.1 before connecting the water.
It is recommended to use a Danfoss FV filter on the inlet to the unit to prevent blockage of the water heater.

NB! The connections are made to the unit fixed connections, see Fig. 11

Figur 11 Water connection



5.1.1 Frost protection of water heating coil

To ensure safe frost protection of water heating coil with the built and factory-tested automatic, the heating coil must always be connected to central heating systems with:

- Flow temperature which is **never below + 40°C** when freezing weather.
- Water flow in heating coil which is **never less than 20 liters. hour at flow temperature of +40°C** when freezing weather.

The radiator thermostat inside the unit is, as antifreeze, locked to an air temperature of approx. 14°C. This causes the radiator thermostat opens if the air temperature drops below 14°C, ensuring water flow through the heating coil, when the system is in standby. If you change this setting, there is a risk that the heating coil can cause frost damage.

Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

Warning for frost protection of water heaters

Water heating coil should **never** be connected to central heating systems, which closed for heat supply - eg. in weekend and holiday periods, so the flow temperature falls below +40°C by freezing weather.
If the flow temperature is below +40°C there is a risk of frost damage on the heating coil, because the heating coil is placed in the inlet from the outdoor air, where the heating coil (along with air to air heat exchanger) during normal operation, heat the clean outdoor air for comfort temperature.
Water heating coil should never be connected to central heating systems where the water flow through the heating coil is interrupted – i.e. central heating systems **with circulation pump is stopped** or switched on for low pump pressure at night setting.

Please also refer to the label that is affixed to the unit:

Important!

Connection to units with water heating.

The heating element is secured against bursting from frost, down to -12 °C, when the value at the scale of the thermostate is set to min. "1,5"

The difference pressure must be at least 0.3 bar and max. 0.9 bar, wich can be secured by adding a regulator in the systems main circuit
If the difference pressure is less than 0.3 bar, it will infer on the closing speed of the servo valve.

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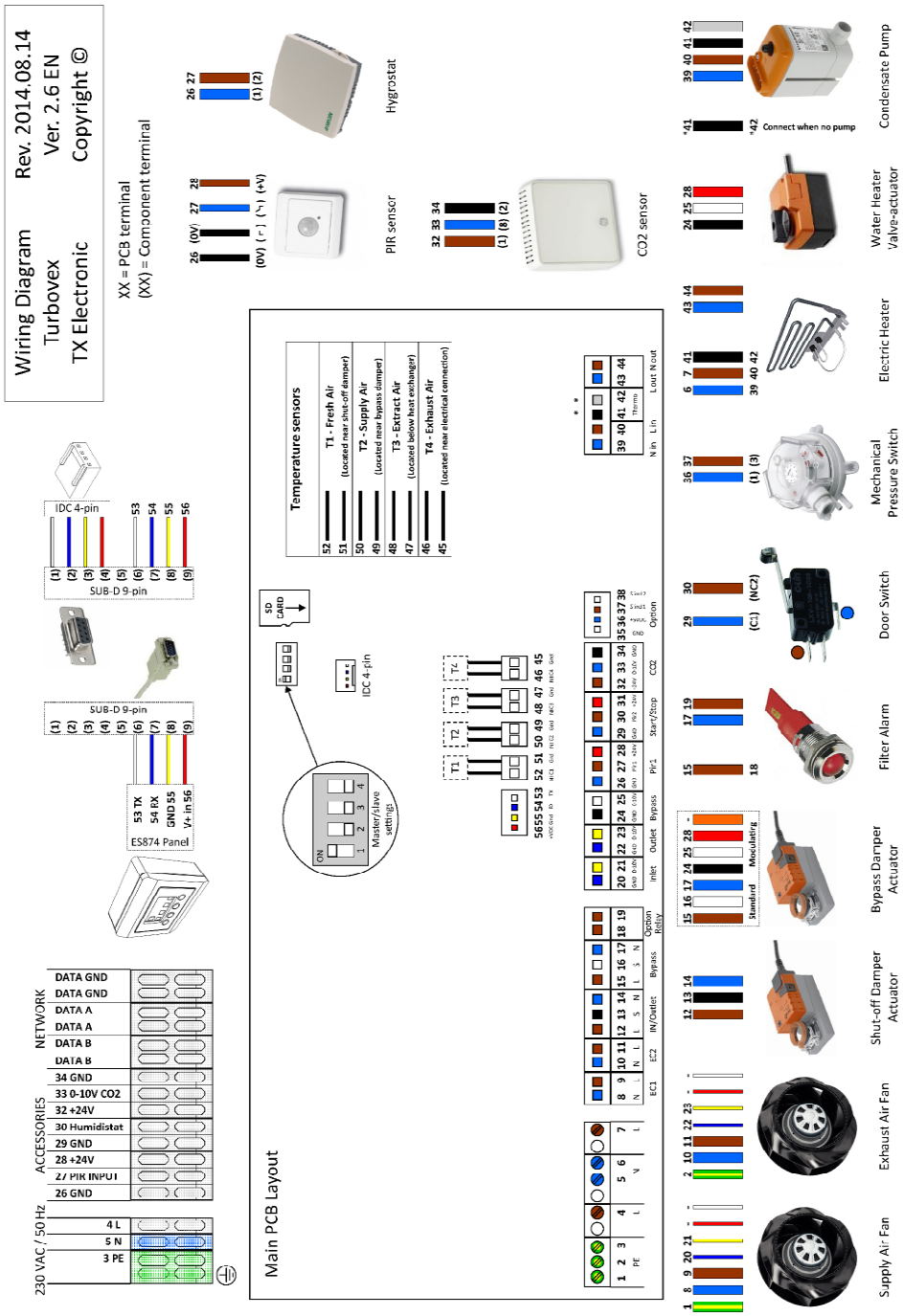
5.2.0 Power connection

Connection of Turbovex TX Comfort according to the circuit diagram, see Fig. 12

Note!
The power connection must be performed by a professional electrician.

Figure 12 Circuit diagram



Note!
A circuit breaker must be installed in front of the ventilation system.

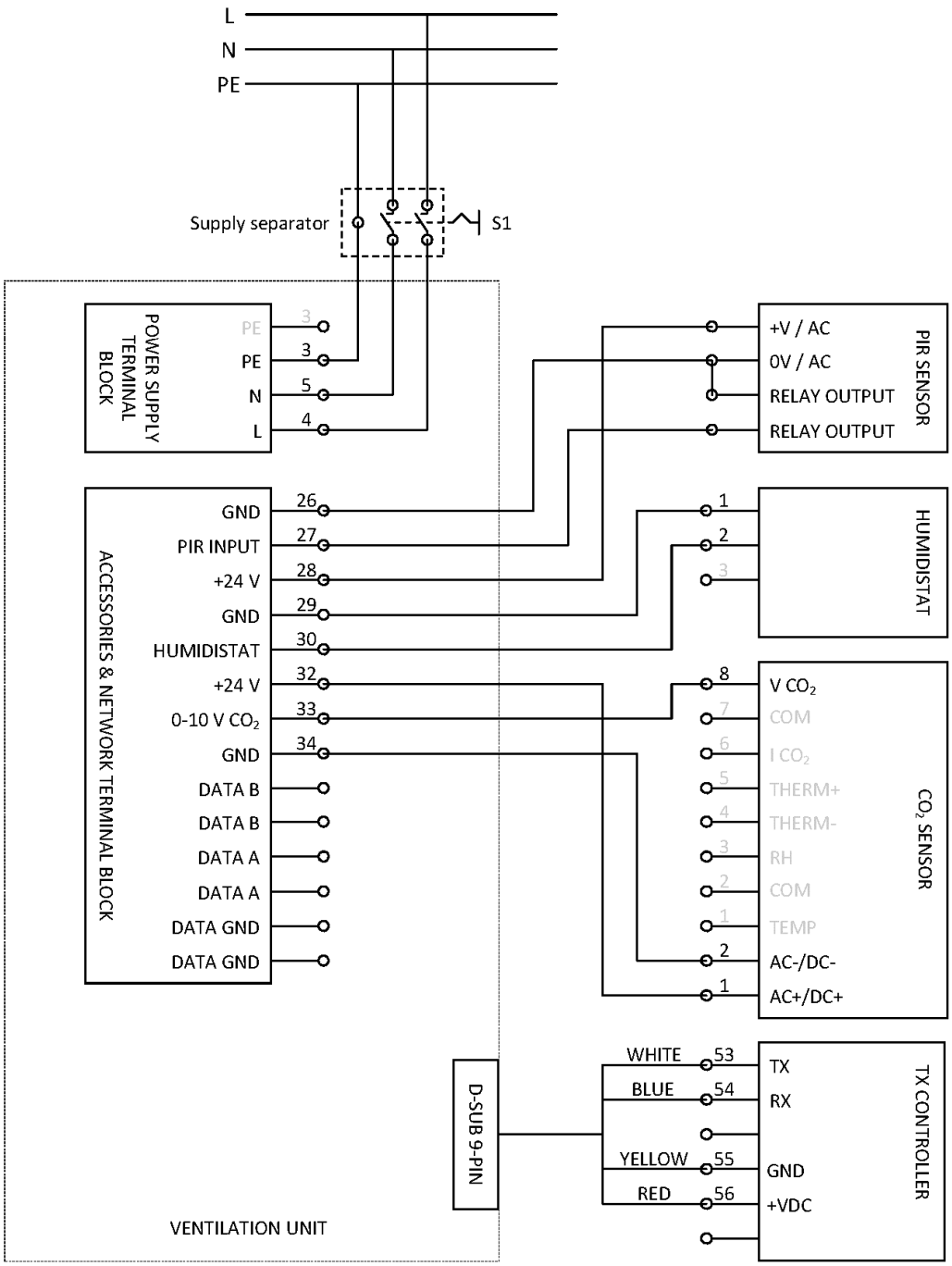
Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

5.3.0 Power connection for accessories

Connection of Turbovex TX Comfort according to the circuit diagram, see Fig. 13

Note!
The power connection must be performed by a professional electrician.

Figure 13 Circuit diagram for accessories



Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

6.0.0 Technical specifications

6.1.0 Ventilation system

Unit:		TX 250A	TX 500A	TX 750A	TX 1000A	Unit
Dimension:						
S	Length	1200	1550	1800	2100	mm
	Depth	595	828	895	1050	mm
	Height	403	493	565	665	mm
Duct:		2 x 160	2 x 250	2 x 315	2 x 315	mm
Weight:		32	41	80	95	Kg
Capacity:						
	Min	100	300	350	500	m³/h
	Max	250	500	750	1000	m³/h
	Forced	480	800	1100	1600	m³/h
Sound:						
	Min	26	25	25	27	dB(A)
	Max	35	35	35	35	dB(A)
	Forced	50	53	50	48	dB(A)
Filter:		F5	F5	F5	F5	Filter class
Energy consumption (motor):						
	Min	12,6	9,8	28,5	14	Watts
		454	118	293	101	J/m³
	Max	28	65	78	150	Watts
		403	468	374	540	J/m³
	Forced	110	113,6	185	199	Watts
		825	511	605	448	J/m³
Output (motor):		2 x 71	2 x 90	2 x 170	2 x 175	Watts
Power supply:		1 x 230/50	1 x 230/50	1 x 230/50	1 x 230/50	Volt/Hz
Temperature efficiency:		80,6	84,5	78	80,6	%
Electric heating surface (option):		400	650	1000	1250	Watt
Water heating surface (option):		340	670	1260	1340	Watt

Air flow indicates the balanced air renewal in relation to the motor voltage and is stated as m^3/h. Contact the distributor if the unit is to be used with forced operation.

The sound level is indicated in decibels (dB) in relation to the air renewal, measured at a distance of 1 meter in front of and 1 meter directly below the air supply grate. By way of comparison it may be mentioned that whispering corresponds to 30 dBA, ordinary spoken conversation corresponds to 60 dB and street traffic to about 90 dBA.

The temperature efficiency on the exchanger is indicated as a percentage (%) and is expressed as the ratio between the obtained temperature difference and the maximum achievable temperature difference.

Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

7.0.0 OPERATION

7.1.0 Regulation of airflow

See also the included manual for the TX electronic controller.

The unit has 2 operational settings. Operation by day provides the dimensioned volume of air the unit was installed for. Operation by night runs slower to save energy during night time.

Note! By regulating the volume of air with a CO2 sensor, the unit controls the velocity required for the room.

> Note!
> The after-run period of ventilation systems with an electric postheating surface is approximately 80 seconds.

7.2.0 Heat regulation

See also the included manual for the TX electronic controller.

The desired temperature is regulated using the control panel. The temperature should not be set higher than the room temperature. The temperature of the fresh air should be 2-3 degrees below the room temperature to provide optimal circulation within the room.
When the unit shuts down, it automatically saves the latest temperature setting and will use this setting when it starts up again.

The unit has a fully automated by-pass system that leads the air around the exchanger when the temperature allows it.

7.3.0 Master / slave

This function requires a small circuit board that can be acquired at the distributor.

Up to 5 slaves can be connected to a master. One unit can thus control 5 other units, so that all 6 units run in exactly the same way.

See the user manual for master/slave options and how to correctly set up the units.

As a standard, the unit is a master.

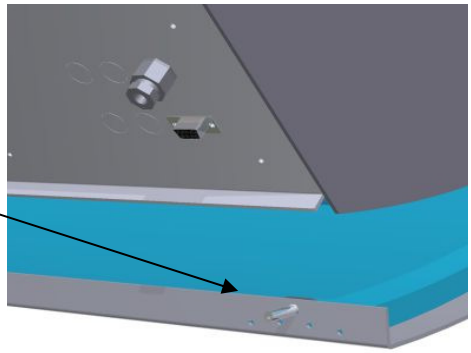
Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

8.0.0 Service

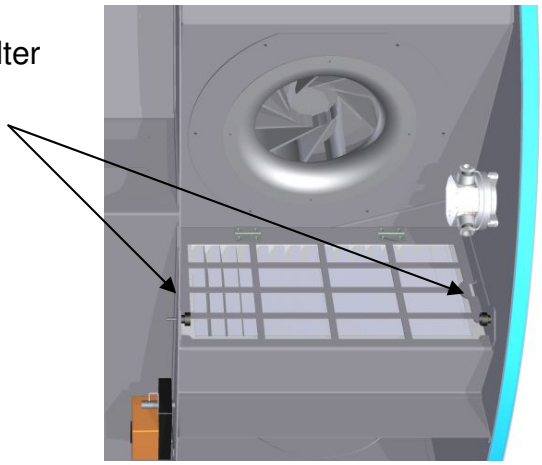
8.1.0 Change of filter

It is recommended to change the filters 2-4 times per year.

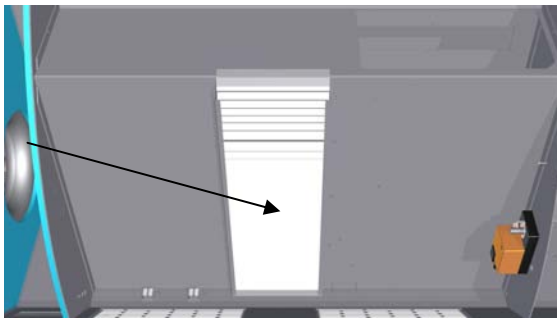
1. Change of supply air filter.
   - Loosen the set screws and open the front Cover using an Allen key.
   - Open the front Cover



   - Loosen the 2 thumbscrews and tilt the filter holder.
   - Replace the used filter with a new one. The side marked “Dust Air Side” must be facing your direction.
   - Tighten the thumb screws, securing the filter holder.



2. Change the exhaust filter
   - Remove the exhaust air filter out and replace it with a new one.
   - Close the front Cover.
   - Make sure to tighten the set screws in order to avoid any leakage in the unit.



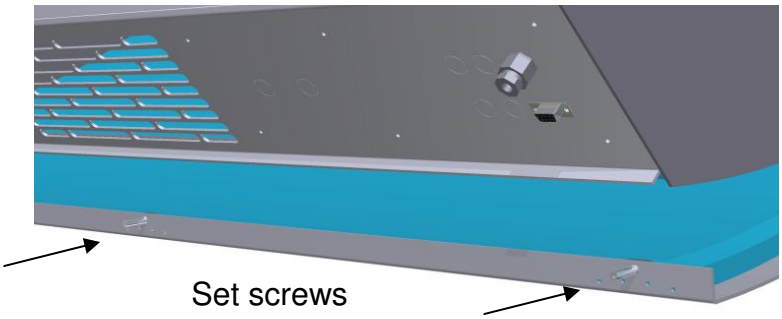
Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

8.2.0 Cleaning of heat exchanger

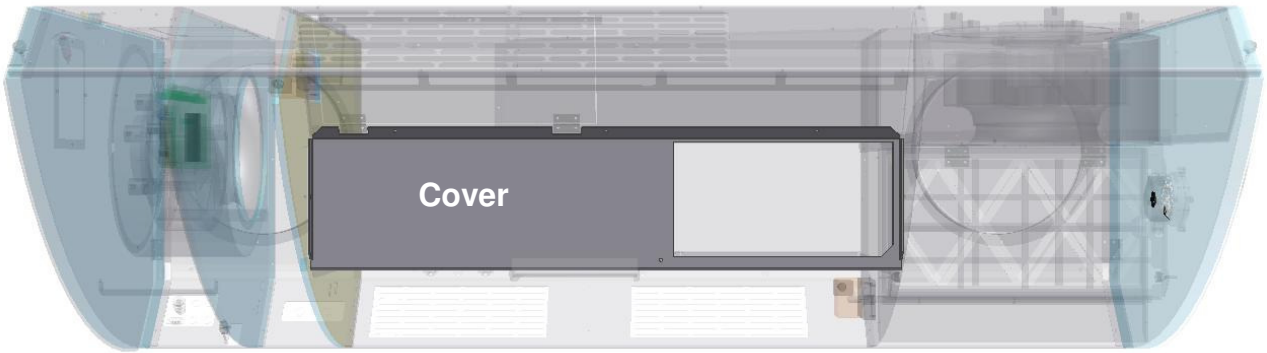
It is recommended to clean the heat exchanger once a year.

> Note!
> Shut off the supply voltage before opening the front Cover.

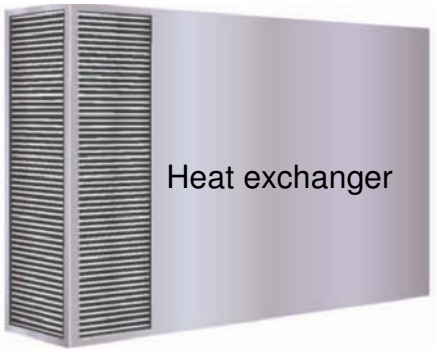
- Loosen the set screws using an Allen key and open the front Cover.



- Remove the cover and pull out the heat exchanger. Gently clean the heat exchanger using a vacuum cleaner.



- Reinsert the heat exchanger and mount the cover.
- If necessary replace the exhaust filter
- Close the front Cover.
  Make sure to tighten the set screws to avoid any leakage in the unit.



Turbovex A/S
Industrivej 45, DK – 9600 Aars
Telefon: +45 96 98 14 62 – Fax: +45 98 96 42 24
e-mail: info@turbovex.dk – www.turbovex.dk

9.0.0 Declaration of conformity

TURBOVEX
- frisk luft til alle
Industrivej 45, DK-9600 Aars
Tlf. +45 96 98 14 62
Fax. +45 98 62 42 24
E-mail: info@turbovex.dk
Web: www.turbovex.dk

CE

DECLARATION OF CONFORMITY

The undersigned, representing
Turbovex A/S

at production site
Industrivej 45
DK-9600 Aars

hereby declares that the products
TX HomeVex, TX 75A, TX 250A, TX 350A, TX 500A, TX 750A, TX 1000A, TX3100A

Is in conformity with
Machinery Directive 2006/42/EC of 17 May 2006
Low Voltage Directive 2014/35/EU of 26 February 2014
EMC Directive 2014/30/EU of 26 February 2014

And the following standards and specifications have been used:
DS 447:2013
(Ventilation for buildings - Mechanical, natural and hybrid ventilation systems)
DS 428:2011
(Code of practice for technical measures for fire protection of ventilation systems)
DS 452:2013
(Thermal insulation of technical service and supply systems)

This declaration is only valid provided that no changes are made to the unit.

Aars, 2014.10.01

Erik Toelberg

Erik Toelberg, Product Manager, Turbovex A/S